

REMARKS

The Examiner is respectfully requested to reconsider the rejection of Claims 1, 2, 5 - 8, and 10 under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art found in the specification in view of Kumar, et al. (U.S. Patent 5,512,131).

The object of the present invention is to form a microcontact printing stamp which possesses a minimum degree of printing distortion. The method of making the improved stamp of the present invention which stamp has a pattern for microcontact printing utilizes a siloxane wherein the siloxane is cured to fix its geometry while at or near the intended final use temperature, followed by a higher temperature step to harden the siloxane, without substantially inducing geometry changes to the stamp and the pattern. The Kumar, et al. article inherently, based upon the manner in which it is formed, does not result in the improved article made by applicant.

Applicant teaches that the pattern fabricated onto the stamp should represent in detail the desired pattern intended to be printed. While this concept may appear in general to be obvious, the extraordinary detail that must be conveyed with microcontact printing makes this faithful representation easier to state as a goal than to realize in practice. Kumar et al. do not form such an improved article.

The stamp, once made, must have mechanical properties, such as elastic modulus, that allow handling during printing, and minimum additional distortion from the stresses incurred during printing contact. While it is possible to do either separately, it has proven to be a severe fabrication challenge to achieve both simultaneously. Kumar et al. do not form such an improved article.

The present invention comprises a simple technique with respect to microcontact printing stamps, to achieve both the required dimensional integrity for pattern faithfulness and desired mechanical properties, primarily high elastic modulus.

It teaches that with the vinyl addition type siloxane precursor mixtures (and others), where crosslinking (curing) can take place at either room temperature or higher temperature, that a two-step cure produces the desired combination of properties.

The first step is a room temperature cure, since generally room temperature is the condition at which the stamp will be ultimately used. The stamp is allowed to crosslink at room temperature for some period, for example one week. This one week curing is contrary to the 30 minute cure disclosed by Kumar at column 18, line 62 as cited by the Examiner. During this period of time, the stamp crosslinks and fixes the overall stamp geometry and the printing pattern in a manner far superior to and not contemplated by Kumar, et al.

After this curing step is completed, the stamp is brought to a higher temperature, in the vicinity of 60 ° C, at which temperature a further cure continues thus attaining a higher elastic modulus. Upon cooling back to room temperature, the original pattern is restored without distortion and the stamp has the desired higher modulus.

The Examiner concedes that the instant specification and the Kumar, et al. reference cited describe certain aspects of the invention, the details of applicant's invention are in fact different. It is in those differences that the patentability of the present invention resides. The specificities of the instant specification and the Kumar, et al. disclosure do not rise to the level required to qualify as appropriate references with respect to Applicant's invention. The Examiner has applied the rejection using the references discussed above, using selective combinations to render obvious the invention.

The rejections use only so much of the disclosures found in the secondary references as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such references, alone and in combination fairly suggest to one of ordinary skill in the art.

The Examiner is requested also to reconsider the rejection of claims 3 and 4 under 35 U.S.C. 103(a), in view of Kumar, et al. in further view of Kim, et al. (U.S. Patent 6,355,198).

Kim, et al. is a "shot gun" type disclosure. It appears from a review of the reference that if a polymer resulting from one or more of the catalog of monomers cited therein has the appropriate structure, it is allegedly suitable for use in their invention.

Considering the number of elements that are disclosed in the Kim, et al. reference, the permutations and combinations of constituents set up would not render the composition used the present invention anymore obvious than any of the other thousands of blends that are disclosed.

Applicants respectfully submit that the specificity of the Kumar and Kim disclosures does not rise to the level required to qualify as an appropriate reference with respect to Applicant's invention.

Further, the reference must describe the applicant's claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it. (Citations omitted) In re Lonnie T. Spada et al., 911 F.2d 705, 708 (Fed. Cir. 1990)

Kumar and Kim alone or in combination, do not disclose or even imply the specific composition of the present invention as presently claimed. In his rejection, the Examiner is picking and choosing elements to the exclusion of what the references as a whole teach to one skilled in the art.

In order to analyze the propriety of the Examiner's obviousness rejections in this case, a review of the pertinent applicable law relating to 35 U.S.C. § 103 is warranted. The Examiner has applied the Kumar and Kim references using selective combinations to render obvious the invention.

The Court of Appeals for the Federal Circuit has set guidelines governing such application of references. These guidelines are, as stated are found in Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ, 543, 551:

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleaned from the invention itself.

A representative case relying upon this rule of law is Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 5 USPQ 2d 1434 (Fed. Cir. 1988). The district court in Uniroyal found that a combination of various features from a plurality of prior art references suggested the claimed invention of the patent in suit. The Federal Circuit in its decision found that the district court did not show, however, that there was any teaching or suggestion in any of the references, or in the prior art as a whole, that would lead one with ordinary skill in the art to make the combination. The Federal Circuit opined:

Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. [837 F.2d at 1051, 5 USPQ 2d at 1438, citing Lindemann, 730 F.2d 1452, 221 USPQ 481, 488 (Fed. Cir. 1984).]

Applicants respectfully submit that there is no basis for the combination of the Kumar and Kim references cited by the Examiner. The Examiner has selected curing steps or physical characteristic specifications from these disparate references for the sake of showing the individual elements claimed without regard to the total teaching of the references. As noted, the Examiner is improperly picking and choosing. It is a piecemeal construction of the invention. Such piecemeal reconstruction of the prior art patents in light of the instant disclosure is contrary to the requirements of 35 U.S.C. § 103.

The ever present question in cases within the ambit of 35 U.S.C. § 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the teachings of the prior art at the time the invention was made. It is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. (Emphasis in original) In re Wesslau 147 U.S.P.Q. 391, 393 (CCPA 1965)

This holding succinctly summarizes the Examiner's application of references in this case because she did in fact pick and choose so much of the Kumar and Kim disclosures (as well as that from Sangokoya with respect to claim 9) to support her position and did not cover completely in the Office Action the full scope of what these varied disclosure references fairly suggest to one skilled in the art.

There is no proper basis for combining the totally different disciplines of Kumar and Kim (and Sangokoya) as has been done in the Official Action.

Further, the Federal Circuit has stated that the Patent Office bears the burden of establishing obviousness, and that this burden can only be satisfied by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the reference.

Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hosp. Sys., 732 F.2d at 1577, 221 USPQ at 933. [837 F.2d at 1075, 5 USPQ 2d at 1599.]

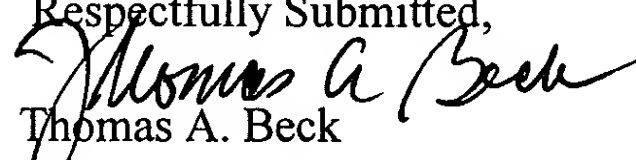
The court concluded its discussion of this issue by stating that teachings or references can be combined only if there is some suggestion or incentive to do so.

In the present case, the skilled artisan viewing the any or all of the references would be directed toward a totally different system than is called for in the present invention.

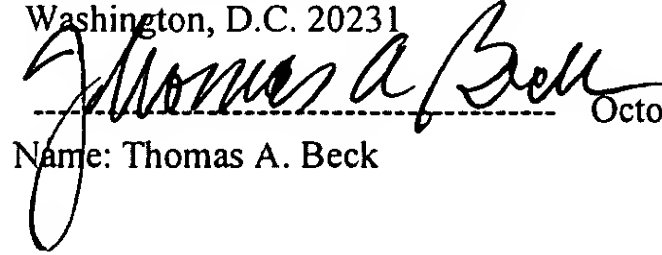
Applicant has attempted to distinguish the invention as embodied in the amended claims over the prior art and the cited paragraphs of 35 U.S.C. § 112. In view of the arguments and modifications to the claims, allowance of this case is warranted. Such favorable action is respectfully solicited.

If there are issues which could be resolved by a telephone conference, Applicant's attorney would be willing to speak with the Examiner concerning such matter(s) at a mutually convenient time. The Examiner is requested to contact Applicant's attorney by telephone.

Respectfully Submitted,


Thomas A. Beck
Registration No. 20,816
26 Rockledge Road
New Milford, CT 06776
Telephone (860) 354-0892

I hereby certify that this paper is being deposited on the date indicated below with the U.S. Postal Service as First Class Mail addressed to Commissioner of Patents & Trademarks, Washington, D.C. 20231


October 25, 2002
Name: Thomas A. Beck

APPENDIX B

VERSION WITH MARKINGS TO SHOW CHANGES MADE

37 C.F.R. § 1.121(b)(iii) AND (c)(ii)

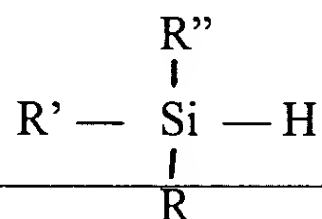
CLAIMS (with indication of amended or new):

3. (Amended) The method of making a stamp having a pattern for microcontact printing defined in claim 2 wherein said siloxane is cured to fix its geometry while at or near the intended final use temperature, followed by a higher temperature step to harden said siloxane, without substantially inducing geometry changes to said stamp and said pattern.
4. (Amended) The method of making a stamp for microcontact printing defined in claim 2 wherein said siloxane elastomer mix is a vinyl addition[- type] siloxane two component mixture.
6. (Amended) The method of making a stamp for microcontact printing defined in claim 1 wherein said elastomer reactive material is selected from the group consisting of siloxane [systems], epoxy [systems], acrylate [systems], polyurethane [systems], polyphosphazine [systems], and styrene copolymers.
7. (Amended) A method of manufacturing a flat panel display where TFT and wiring dimensions contained therein are microscopically small and registration of subsequent layers of such display is within microns over many inches, said method using a stamp fabricated in accordance with the [methoid] method defined in claim 1.

8. (Amended) A method of manufacturing a microelectronic pattern said method using a stamp fabricated in accordance with the method defined in claim 1.

9. (Amended) The method of making a stamp for microcontact printing as defined in claim 6 wherein said siloxane system contains moieties selected from the group consisting of hexamethylcyclotrisiloxane, octamethylcyclotrisiloxane, decamethylcyclotrisiloxane, octaphenylcyclotetrasiloxane, diphenylsilanediol, trimethyltriphenylcyclotrisiloxane, vinylmethylcyclosiloxanes, trifluoropropylmethylcyclosiloxanes, methylhydrocyclosiloxane, hexamethyldisiloxane, divinyltetramethyldisiloxane, and tetramethyldisiloxane.

10. (Amended) The method of making a stamp for microcontact printing as defined in claim 6 wherein said siloxane system comprises polydimethyl siloxane oligomers with silyl vinyl groups (- Si - C = CH₂) and polydimethyl siloxane oligomers with silicon hydride groups having the formula:



wherein R, R', R'' are methyl, [and] phenyl, vinyl respectively and hydrogen, which will react with the vinyl groups in the presence of a catalyst to cross-link into a rubber material.